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demographic background to change in the number and composition of female wage earners in Canada 1951 – 1961

DOMINION BUREAU OF STATISTICS





DOMINION BUREAU OF STATISTICS  
Special Manpower Studies and Consultation Division

**SPECIAL LABOUR FORCE STUDIES**

**Series B, No. 1**

**The Demographic Background to Change in the Number  
and Composition of Female Wage-Earners in  
Canada, 1951 to 1961**

by

**John D. Allingham**

**University of Western Ontario**

and

**The Australian National University**

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## FOREWORD

In 1966 the Special Labour Force Studies series was initiated by the Dominion Bureau of Statistics (see list on page 2). The research studies were designed to reach a broad audience interested in the changing nature and composition of the Canadian labour market. Some aspects of manpower development, however, require a somewhat more technical analytical approach. For this reason, the present series (B), of which this is the first study, will be published as a companion series of technical papers.

These studies are prepared under the direction of Dr. Sylvia Ostry, Director, Special Manpower Studies and Consultation.

The responsibility for the analysis and interpretation of the data is that of the author and not of the Dominion Bureau of Statistics.

WALTER E. DUFFETT,  
*Dominion Statistician.*



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## AUTHOR'S PREFACE

This study was begun in the early summer of 1966 in the Research and Analysis Section of the Labour Division. Its completion was made possible by the valuable criticisms of early drafts by Mr. Norman Davis and Drs. Ostry and Stone, to whom I am indebted.

Most of the calculations presented were performed by MATOP 7, the matrix manipulation programme prepared in the Scientific Programming Section of the Bureau.

To the animate and inanimate, I express my thanks.





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## SECTION I

### Introduction

Change in the demographic structure of a population often has far-reaching consequences. The primary aim of this report is to illustrate the impact of change in the age and marital-status composition of the female population in Canada, between the census dates of June 1951 and June 1961, on the number and demographic composition of female wage-earners.

Students have observed three changes of considerable magnitude in the structure of Canada's female work force over the decade 1951 to 1961:

- (a) a rise in the median age of the female worker—from about 29 years in 1951 to about 34 years in 1961;<sup>1</sup>
- (b) an increase in the percentage of working women who were married—from about 30 in 1951 to about 50 in 1961;<sup>2</sup>
- (c) growth in the number of females aged 15 or more in the work force—from 1,166,540 in 1951 to 1,763,862 in 1961.<sup>3</sup>

While such changes have been amply documented,<sup>4</sup> little attention has been given to the role of shifts in the demographic structure of the total female population of working age in influencing shifts in the demographic structure of the female work force.

In order to obtain comparable data from the 1951 and 1961 Censuses, the analysis in this report had to be restricted to female wage-earners, rather than considering the total female labour force.<sup>5</sup> However, given that female wage-earners constitute such a high proportion of the female labour force—about 92 per cent in 1951 and 90 per cent in 1961—points made in this report with respect to wage-earners are likely applicable to the total female work force.

### The Construction of Participation Measures

The extent of labour force participation is often measured in terms of a "crude" labour force participation rate, which is simply the percentage of economically active persons among the base population of 'potential' workers. The 'potential' workers may be called the population 'at risk' for the status of labour force members. In this study two populations

<sup>1</sup> Source: Based on unpublished data from the 1951 and 1961 *Census of Canada*.

<sup>2</sup> Source: The 1951 figure is based on females aged 14 and over, and was calculated from the 1951 *Census of Canada*, Vol. X, Table 66. The 1961 figure, based on females aged 15 and over, was calculated from the 1961 *Census of Canada*, Vol. III, Bulletin 3.1—9, Table 17.

<sup>3</sup> Source: The 1951 figure, excluding women aged 14, was calculated from the 1951 *Census of Canada*, Vol. X, Table 60. The 1961 figure is from the 1961 *Census of Canada*, Vol. III, Bulletin 3.1—1, Table 3. Both figures exclude the Yukon and Northwest Territories.

<sup>4</sup> As examples, see: Dept. of Labour, *Women at Work in Canada*, Ottawa: Queen's Printer, 1964, and Ostry, S., "The Female Worker", one of a series of *Labour Force Studies*, 1961 Census Monograph Programme, Ottawa: Queen's Printer, 1967.

<sup>5</sup> The other components of the labour force, according to the 1961 census classification, are the self-employed, and unpaid family workers.

at risk' were all females aged 15 or more, on the census dates of June 1951 and June 1961. Of the 1951 population at risk, about 22 per cent was in the labour force, while 26 per cent of the 1961 population at risk was so classified, the two percentages indicating the crude participation rates. The actual numbers of female wage-earners at the two census dates can be derived by multiplying the relevant participation rate, as a proportion, times the appropriate population at risk.

That is:  $A = B \times P$ ,

where  $A$  = number of female wage-earners;  
 $B$  = population at risk (females aged 15 or over);  
 $P$  = crude participation rate, as a proportion.

One can easily see that the number of wage-earners can be affected by the magnitude of either 'B' or 'P': that is, by change in the size of the base population (the population at risk) or the level of the participation rate, or by change in both factors. The number of female wage-earners in Canada increased from 1,072,178 in 1951 to 1,583,176 in 1961, or by about 48 per cent. Contributing to that increase was both the larger population at risk in 1961 and the higher 1961 crude participation rate.

The crude participation rate may be viewed as a weighted summary of more specific rates. For example, one can divide the total female population aged 15 or over into ever-married<sup>6</sup> and single (never-married) women and construct separate participation rates for the two categories. The overall crude participation rate would then be a summary of the two marital-status-specific rates weighted by the proportion each category constituted of the total female population.<sup>7</sup>

Consider a classification of the population into categories (1, 2, ..., i, ..., K) of a given characteristic 'I'. In general, the overall crude participation rate, 'P', may be written:

$$P = \frac{\sum_i n_i c_i}{N} = \sum_i \frac{n_i}{N} c_i, \text{ where}$$

$P$  = the overall crude participation rate;

$n_i$  = the number of persons in the  $i$ th category of characteristic 'I' in the population;

$c_i$  = the specific rate for persons in the  $i$ th category of trait 'I' in the population;

$N$  = the total number of persons in the population ( $N = \sum_i n_i$ ).

In this paper, participation rates of women as wage-earners, specific for both age group and marital status are considered.

<sup>6</sup> Ever-married women are those who are married, widowed, or divorced. In the Canadian census, married women include women legally separated from their husbands.

<sup>7</sup> Henceforth "total female population" will refer to the female population aged 15 or more.

Shifts in the crude participation rate may or may not be of importance in accounting for change in the number of wage-earners over time. As noted above, a simple expansion of the population at risk, subject to an unchanged participation rate, would provide an increase in the number of workers, just as a decrease in the population at risk would provide the opposite. However, one must consider the fact that certain segments of the female population are more likely to be labour force participants than are others. For example, young married women with children are far less likely to be in the labour force than are young single women. The importance of either age or marital status for labour force status is culturally somewhat variable. However, the momentum of custom within a given culture to some extent legitimizes generalization about the likely impact of change in the age and marital-status composition of the total female population on the number and demographic composition of female workers.

Any increase in the proportion of females less "at risk" for labour force participation will, all else being equal, reduce the crude participation rate. For example, a large and increasing proportion of teen-aged women is remaining in school, and hence out of the full-time labour force;<sup>8</sup> therefore, any increase in their proportionate representation in the total female population would tend to reduce the overall crude rate of participation. Similarly, because of current retirement practices, any increase in the proportion of women aged 65 or over would have a similar effect, all else being equal. Alternately, a **decrease** in the proportionate representation of one or both of the age extremes among the potential working population would result in an **increase** in the crude participation rate, all else equal.

Similarly, given the different participation propensities of marital-status groups, a change in the population composition by marital status may be expected to affect the overall crude participation rate and hence, the number of workers. Therefore one must consider at least three factors in a study of change in the number of workers over time and change in the age and marital-status composition of the workers:

- (1) growth or decline of the population at risk, i.e. the total female population;
- (2) a shift in the age and marital-status composition of the total female population;
- (3) change in the participation rates specific to age and marital-status categories.

<sup>8</sup> In 1951, 40.2 per cent of females aged 15-19 had attended school at some time in the past year. By 1961 this figure had increased to 56.0 per cent. See the 1961 *Census of Canada*, Vol. VII, Bulletin 7.1-10, Table 3. Unfortunately, the Census is taken in June when many students are temporarily in the labour force. However, participation rates for such women are still lower than those for older women.

## The Demographic Structure of the Female Population, 1951 and 1961 in Terms of Numbers, Age and Marital-status Composition

An increased female population at risk for labour force participation was almost inevitable over the 1951 to 1961 decade—barring increased mortality rates and avoidance of net population loss through migration—since past patterns of fertility, mortality and migration had created by 1951 a population structure conducive to population growth. Table I shows the effects of the momentum for increase provided by the age structure of the female population in 1951. Since the number of women in each age group was generally larger the younger the age group, and given relatively low mortality rates extant during the 1950's, the number in most age groups in 1961 would be larger than the number in that age group in 1951. Table I shows that positive net migration made such increases even more prominent.

The age and marital-status distributions of a population are not usually independent; an aging population will likely have a higher proportion of ever-married persons, and *vice-versa*. However, changes in the age and marital-status composition of the female population can work in the same or in opposite direction with respect to an increase or decrease in the representation of certain age groups in the work force. For example, a larger proportion of the female population was aged 15-19 years in 1961 than in 1951. Therefore, if age-specific participation rates remained the same, the shift in age structure in favour of those aged 15-19 would produce a larger proportion of female workers aged 15-19 in 1961. However, a larger proportion of women aged 15-19 was married in 1961. Hence, if all else were equal—i.e. the same age and marital-status-specific participation rates—a larger proportion of females in 1961 than in 1951 would be working at the lower rate for married females. Therefore, the proportionate advantage gained by women aged 15-19 over the decade was counteracted to some extent by their higher married proportion. Conversely, changes in the age and marital-status composition augmented each other for women aged 20-24. Such women were not only a smaller proportion of the 1961 total female population, a higher proportion was married, hence less 'at risk' for labour force participation.

## Changes in Age Structure Among Females in Canada Between 1951 and 1961

The change in the age structure of the female population was, overall, unfavourable for an increased crude participation rate. Table IIA illustrates the restrictive age shifts that occurred within the potential working population as defined. The age group with the **highest** participation rate in both 1951 and 1961 showed the **smallest** percentage increase over the decade, the reason being that most were born during the low-fertility depression years of the 1930's.



**TABLE I. Natural Increase and Actual Increase by Age Group, of Females in Canada, Provinces and Territories, 1951 to 1961<sup>1</sup>**

Age group	A 1951 female population by age group	B Estimated survivors of 1951 population in 1961	C Actual 1961 population	D Estimated net migration (C - B)
5 - 9.....	683,952			
10 - 14.....	555,661			
15 - 19.....	525,792	681,064	703,524	+ 22,460
20 - 24.....	551,106	552,815	596,507	+ 43,692
25 - 29.....	578,403	522,394	595,400	+ 73,006
30 - 34.....	530,177	546,666	627,403	+ 80,737
35 - 39.....	495,512	572,378	639,852	+ 67,474
40 - 44.....	422,767	522,334	558,965	+ 36,631
45 - 49.....	356,971	484,132	499,800	+ 15,668
50 - 54.....	322,195	407,633	420,279	+ 12,646
55 - 59.....	278,126	337,355	343,690	+ 6,335
60 - 64.....	241,828	294,643	291,066	- 3,577
65 - 69.....		241,308	247,417	
70 - 74.....		193,090	206,099	
<b>Totals, 15 - 64.....</b>	<b>4,302,877</b>	<b>4,921,414</b>	<b>5,276,486</b>	<b>+ 355,072</b>

<sup>1</sup> Actual 1951 and 1961 population figures from 1961 *Census of Canada*, Bulletin 1.2-2, Table 20. The estimate of survivors in June, 1961, of the female population enumerated in June 1951, was derived by constructing survival ratios. The survival ratios used indicate the proportion of women by age group, expected to survive ten years. Data for the construction of survival ratios were taken from life tables applicable to Canadian females in the period 1955-57. See: *Canadian Life Tables 1950-52 - 1955-57*, Reference Paper, Ottawa: Dominion Bureau of Statistics, 1960, pp. 12, 13. Survival ratios used are ratios of the number of women in the life-table population alive at the mid-point of each age interval, divided by the number alive ten years earlier. For example, of an initial life table cohort of 100,000 about 96,236 remained alive, at mortality rates of 1955-57, by ages 15-19, and 95,614 were still living at ages 25-29. The survival ratio, over ten years, of women aged 15-19 is therefore  $\frac{95,614}{96,236} = .99353$ . This proportion is then multiplied by the number of females aged 15-19 in June 1951 (525,792) to estimate the number who would survive to June 1961 (522,390). The reader should consider this table as only a rough estimate of net migration.

**TABLE IIA. Percentage Increase of the Female Population by Age Group, Canada, 1951 to 1961, in Relation to Participation Rates as Wage-earners**

Age group	Percentage increase 1951 to 1961 <sup>1</sup>	Participation rates as wage-earners <sup>2</sup>	
		1951	1961
15-19.....	35.1	36.14	32.16
20-24.....	8.2	45.76	47.96
25-34.....	10.2	22.71	26.94
35-44.....	30.5	19.36	26.85
45-54.....	35.4	17.57	28.17
55-59.....	23.6	13.55	22.96
60-64.....	15.2	10.10	16.62
65 and over.....	34.0	3.85	5.01
<b>Totals .....</b>	<b>30.2</b>	<b>22.19</b>	<b>26.46</b>

<sup>1</sup> Source: 1961 *Census of Canada*, Volume VII, Bulletin 7.1-4, Table II, p. 24.

<sup>2</sup> Source: Special tabulation, Census Division, Dominion Bureau of Statistics.

A positive net migration had resulted in only a partial "filling-out" of the depleted birth cohorts of the depression.<sup>9</sup> The resurgent fertility of the later years of World War II, and immediately following the war, was mainly responsible for the disproportionate increase of females aged 15-19 over the decade.

Table IIB shows the overall depressing effect of the shift in age structure on the number of women participating in the labour force. Given participation rates of either 1951 or 1961, by age group, the 1961 total female population was simply less 'at risk' for participation.

### Change in the Marital-status Composition of Females in Canada Between 1951 and 1961

The impact of change in marital-status composition on labour force participation depends greatly on the age groups most affected; the smaller a given age group is in relation to the total population, the less important will be any shifts in marital-status composition within that group. For example, if all single females aged 65 or more became married and participated in the work force at the lower rate of married women of that age, the loss of workers would be slight. Not only do women aged 65 or over constitute a small percentage of the female population aged 15 or more—about three per cent in 1961—the participation rates for all marital-status categories of the aged are relatively low.<sup>10</sup> The biggest potential impact of a shift in marital-status composition is among the younger age groups which constitute a large proportion of the total, and where participation differences between the married and single women are quite marked.

Change in the marital-status composition of the female population between 1951 and 1961 are given in Table III. Table IV illustrates the implications of such shifts for labour force participation under either 1951 or 1961 rates.

Table IV shows that the greatest declines in the proportions single occurred in the age groups with the highest participation rates for single women, thus maximizing the impact. For example, the greatest decline in the proportion single occurred among women aged 20-24. Since females aged 20-24 had the highest participation rates in both years, the participation loss implicit in the marital-status shift of that age group was especially significant. Among age groups with low participation rates even for single women—e.g. women aged 65 or over—the shift in marital-status composition was minute.

The overall decline in the proportion of the total female population that was single—a decline of 2.7 percentage points between 1951 and 1961—was

especially significant because most of the decline came among women aged 20-34 years. Women aged 20-34 are especially important since their participation rates as single women have been very high in contrast to their participation as married females.

In summary, changes in both the age and the marital-status composition of the female population over the decade tended to restrict work force participation. The younger women, with the traditionally higher participation, comprised a smaller proportion of the 1961 population. Moreover, a higher proportion of these younger women was married in 1961, further reducing the likelihood that younger women would maintain their representation in the 1961 labour force.

### The Impact of Change in the Age and Marital-status Distribution of the Female Population Between 1951 and 1961 on the Relative Exposure of that Population to the Risk of Labour Force Participation

In order to illustrate the hypothetical implications of change in the age or marital-status distributions or both, of the female population for the size of the work force, the total number of females in 1961 is distributed hypothetically according to various combinations of 1951 and 1961 age and marital-status distributions. The reader can compare, in Table V, the structure of the actual 1961 female population with the hypothetical populations, standardized<sup>11</sup> on the different combinations of 1951 and 1961 distributions.

Table V shows that changes in the age and marital-status distributions over the decade reduced the relative size of those categories of the population with the highest participation propensities: young, single women. For example, consider women aged 20-24. If the 1961 population were distributed by age and marital status as was the 1951 population, there would have been 330,846 single women aged 20-24. By assuming no change in the age distribution over the decade but allowing the marital-status composition to change as it did, the hypothetical number of single women aged 20-24 is reduced to 288,931. By allowing the age distribution to change as it did over the decade while at the

<sup>11</sup> Standardization is simply a procedure whereby one hypothetically re-distributes a given population on the basis of, say, the distribution of a previous population. For example, by multiplying the 1961 total female population by the age distribution (proportions), of the 1951 population, we derive a hypothetical population in 1961 with the same distribution by age as existed in 1951. One can then compare the actual with the hypothetical population to observe the effect of a shift in the age distribution over the decade. The procedure can be extended to cover several variables simultaneously. For example, one may wish to compare the actual 1961 population of females with two hypothetical 1961 populations, the first derived by assuming the 1961 population was distributed by age exactly as in 1951 but by marital status as in 1961. The second hypothetical 1961 population might be based on the assumption of both 1951 age and marital-status distributions. For a technical summary of various considerations involved in standardization, see Kitagawa, E.M., "Standardized Comparisons in Population Research", *Demography*, Vol. 1 No. 1, 1964, pp. 296-315.

<sup>9</sup> Based on Report SR-2, *The Basic 1961 Census Data on Immigration and Citizenship*, Economic and Social Research Division, Dept. of Citizenship and Immigration, Ottawa; Sept. 1963, Pt. VIII, pp. 85-93.

<sup>10</sup> The range in 1961 was from 4 per cent for the married to 22 per cent for single females aged 65 and over.



**TABLE II B. The Effect of Changes in the Age Structure of the Female Population, 1951 to 1961, on the 1961 Population 'At Risk' for Labour Force Participation**

Age group	A Actual 1961 population <sup>1</sup>	B Actual 1961 population standardized on the 1951 age distribution	A - B
15-19 .....	702,347	650,142	+ 52,205
20-24 .....	595,106	681,436	- 86,436
25-34 .....	1,219,952	1,370,565	- 150,613
35-44 .....	1,196,861	1,135,829	+ 61,032
45-54 .....	918,936	840,323	+ 78,613
55-59 .....	343,345	344,165	- 820
60-64 .....	290,817	299,309	- 8,492
65 and over .....	716,615	662,210	+ 54,405
<b>Totals .....</b>	<b>5,983,979</b>	<b>5,983,979</b>	

<sup>1</sup> Excludes the Yukon and Northwest Territories.

**TABLE III. Percentage Distribution of the Female Population by Age and Marital Status, 1951 and 1961<sup>1</sup>**

Age group	Single		Married		Widowed and divorced	
	1951	1961	1951	1961	1951	1961
	per cent					
15-19 .....	92.1	91.3	7.9	8.6	0.0	0.1
20-24 .....	48.6	40.5	51.1	59.2	0.3	0.3
25-34 .....	17.5	13.0	81.2	85.9	1.3	1.1
35-44 .....	12.4	9.1	84.0	87.8	3.6	3.1
45-54 .....	11.4	9.9	79.4	81.6	9.2	8.5
55-64 .....	10.1	10.4	69.3	69.1	20.6	20.5
65 and over .....	10.5	10.2	41.5	41.2	48.0	48.6
<b>Totals .....</b>	<b>25.7</b>	<b>23.0</b>	<b>64.5</b>	<b>66.8</b>	<b>9.8</b>	<b>10.2</b>
<b>Totals (in 000's) .....</b>	<b>No. 1,215</b>	<b>1,347</b>	<b>3,050</b>	<b>3,920</b>	<b>465</b>	<b>598</b>

<sup>1</sup> Source: The 1961 *Census of Canada*, Volume VII, Bulletin 7.1-5, Tables 5, 6, pp. 15, 16. The widowed and divorced distribution was derived by subtracting the sum of the single and married women from the total.

**TABLE IV. Percentage Change by Marital Status of Females by Age Group, 1951 to 1961, in Relation to Participation Rates of Females as Wage-earners, 1951 and 1961**

Age group	Change in percentage <sup>1</sup>	Participation rates of single females		Change in percentage <sup>1</sup>	Participation rates of single females	
	Single, 1951 to 1961	1951	1961	Married, 1951 to 1961	1951	1961
15-19 .....	- 0.8	37.9	33.0	+ 0.7	15.9	23.1
20-24 .....	- 8.1	76.3	80.4	+ 8.1	16.8	25.8
25-34 .....	- 4.5	76.0	79.2	+ 4.7	10.8	18.7
35-44 .....	- 3.3	71.1	74.5	+ 3.8	10.5	21.0
45-54 .....	- 1.5	64.1	68.7	+ 2.2	8.9	21.1
55-64 .....	+ 0.3	49.3	56.4	+ 0.2	4.4	11.9
65 and over .....	- 0.3	16.9	19.7	+ 0.3	1.2	2.2
<b>Totals .....</b>	<b>- 2.7</b>	<b>56.3</b>	<b>52.6</b>	<b>+ 2.3</b>	<b>9.6</b>	<b>18.5</b>

<sup>1</sup> Percentage changes are simply the percentage-point differences between the 1951 and 1961 percentages.

same time assuming no change in the marital-status distribution, our population of single women aged 20-24 is reduced still further to 275,928. Therefore, both age and the marital-status shifts over the decade were detrimental to growth of the population of single women aged 20-24; this is seen in Table V where the number of such women actually recorded is only 240,971—some 89,875 fewer than the number in a hypothetical situation where no change occurred in either the age or the marital-status distributions. At constant participation rates therefore, the representation of women aged 20-24 in the work force would have declined between 1951 and 1961.

Shifts in the age and marital distributions worked in opposite directions for females aged 15-19. If the 1961 population had the same demographic com-

position as the 1951 population, there would have been 598,712 single females aged 15-19 in 1961. If only the marital-status distribution had remained constant, the age structure changing to that extant in 1961, the number of single females aged 15-19 rises to 646,788, as shown in Table V. However, if the 1951 age distribution is held constant and the 1961 marital-status distribution is applied, the number of single females falls to 593,420, or less than under the original assumption of no change in demographic composition. Thus the changed age structure favoured an increase of single women aged 15-19 while the higher proportion married in 1961 worked in the opposite direction—cutting into the ranks of otherwise single females. The actual number of such women in 1961 is therefore the product of opposing forces.

**TABLE V. The 1961 Female Population Aged 15 and Over, Standardized on the 1951 Age and Marital status Distributions**

Age group	Total	Single	Married	Widowed and divorced	Total	Single	Married	Widowed and divorced
	1961 population on 1961 age, marital-status distributions				1961 population on 1951 age, 1961 marital-status distributions			
15-19.....	702,347	641,071	60,958	318	650,142	593,420	56,427	295
20-24.....	595,106	240,971	352,288	1,847	681,436	275,928	403,393	2,115
25-34.....	1,219,952	157,739	1,048,779	13,434	1,370,565	177,213	1,178,259	15,093
35-44.....	1,196,861	108,383	1,051,064	37,414	1,135,829	102,856	997,467	35,506
45-54.....	918,936	90,916	750,187	77,833	840,323	83,138	686,010	71,175
55-59.....	343,345	35,903	250,572	56,870	344,165	35,989	251,170	57,006
60-64.....	290,817	29,746	188,487	72,584	299,309	30,615	193,991	74,703
65 and over.....	716,615	72,875	295,470	348,270	662,210	67,343	273,038	321,829
<b>Totals .....</b>	<b>5,983,979</b>	<b>1,377,604</b>	<b>3,997,805</b>	<b>608,570</b>	<b>5,983,979</b>	<b>1,366,502</b>	<b>4,039,755</b>	<b>577,722</b>
	1961 population on 1961 age, 1951 marital-status distributions				1961 population on 1951 age, marital-status distributions			
	Total	Single	Married	Widowed and divorced	Total	Single	Married	Widowed and divorced
15-19.....	702,347	646,788	55,425	134	650,142	598,712	51,306	124
20-24.....	595,106	288,931	304,669	1,506	681,436	330,846	348,866	1,724
25-34.....	1,219,952	212,425	991,495	16,032	1,370,565	238,651	1,113,903	18,011
35-44.....	1,196,861	148,096	1,006,016	42,749	1,135,829	140,544	954,716	40,569
45-54.....	918,936	103,870	730,456	84,610	840,323	94,984	667,967	77,372
55-59.....	343,345	34,889	249,745	58,711	344,165	34,973	250,341	58,851
60-64.....	290,817	28,573	190,450	71,794	299,309	29,407	196,011	73,891
65 and over.....	716,615	74,706	297,909	344,000	662,210	69,034	275,292	317,884
<b>Totals .....</b>	<b>5,983,979</b>	<b>1,538,278</b>	<b>3,826,165</b>	<b>619,536</b>	<b>5,983,979</b>	<b>1,537,151</b>	<b>3,858,402</b>	<b>588,426</b>

### Participation Rates

As previously noted, changes in the demographic structure<sup>12</sup> of the female population between 1951 and 1961 were unfavourable for an increase in the overall crude participation rate of women aged 15 or over, since those segments of the population with the highest participation rates in both 1951 and

1961 suffered a proportionate decline. However, despite the restrictive demographic changes over the decade, the crude participation rate of females as wage-earners **rose** from about 22 per cent in 1951 to about 26 per cent in 1961. The reason for the increase is indicated in Table VI. Participation rates increased over the decade for all groups excepting single females aged 15-19, the most dramatic increases being registered by married women.

Table VII shows that in the decade under consideration, changes in participation rates constituted a more important determinant of the number of female

<sup>12</sup> The reader is reminded that "demographic structure" refers in this paper only to the age and marital-status composition. Other important facets of demographic structure would include sex ratios and child status (parity) of married women.



wage-earners than did shifts in the demographic composition of the population. To illustrate, application of the 1961 participation rates to the most unfavourable base population—the 1961 total distributed according to the 1961 age and marital-status structure—provided a larger number of wage-earners than did the application of 1951 participation rates

to the most favourable base population—the 1961 total distributed according to the 1951 age and marital-status structure.

Appendices A and B, pp. 23-24, list the hypothetical populations of the 1961 wage-earners, derived from various standardization procedures.

**TABLE VI. Participation Rates of Females by Age Group and Marital Status, as Wage-earners in Canada, 1951 and 1961<sup>1</sup>**

Age group	1951				1961			
	Total	Single	Married	Widowed and divorced	Total	Single	Married	Widowed and divorced
15-19 .....	36.14	37.87	15.94	37.00	32.16	33.02	23.10	45.60
20-24 .....	45.76	76.26	16.80	55.53	47.96	80.36	25.75	59.61
25-34 .....	22.71	76.01	10.75	55.84	26.94	79.15	18.69	57.52
35-44 .....	19.36	71.09	10.48	49.12	26.85	74.45	20.96	54.26
45-54 .....	17.57	64.13	8.85	35.63	28.17	68.71	21.14	48.56
55-59 .....	13.55	55.06	5.35	23.75	22.96	62.06	14.35	36.21
60-64 .....	10.10	42.40	3.28	15.35	16.62	49.54	8.65	23.82
65 and over .....	3.85	16.93	1.20	3.30	5.01	19.71	2.20	4.33
<b>Totals .....</b>	<b>22.19</b>	<b>56.25</b>	<b>9.56</b>	<b>16.04</b>	<b>26.46</b>	<b>52.60</b>	<b>18.47</b>	<b>19.72</b>

<sup>1</sup> Source: Unpublished tabulation, Census Division, Dominion Bureau of Statistics.

**TABLE VII. Populations of Female Wage-earners, 1961, Derived by Application of 1951 and 1961 Participation Rates (Table VI) to Total Population of Table V<sup>1</sup>**

Age group	1961 female population by			
	1951 age, 1951 marital-status distribution, 1951 participation rates	1961 age, 1951 marital-status distribution, 1951 participation rates	1951 age, 1961 marital-status distribution, 1951 participation rates	1961 age, 1961 marital-status distribution, 1951 participation rates
15-19 .....	234,973	253,841	233,849	252,626
20-24 .....	311,863	272,354	279,358	243,967
25-34 .....	311,210	277,011	269,803	240,154
35-44 .....	219,936	231,754	195,137	205,622
45-54 .....	147,617	161,427	139,409	152,451
55-59 .....	46,631	46,520	46,797	46,685
60-64 .....	30,234	29,376	30,804	29,931
65 and over .....	25,476	27,568	25,292	27,370
<b>Totals .....</b>	<b>1,327,940</b>	<b>1,299,851</b>	<b>1,220,449</b>	<b>1,198,806</b>
Age group	1951 age, 1951 marital-status distribution, 1961 participation rates	1961 age, 1951 marital-status distribution, 1961 participation rates	1951 age, 1961 marital-status distribution, 1961 participation rates	1961 age, 1961 marital-status distribution, 1961 participation rates
15-19 .....	209,573	226,402	209,087	225,876
20-24 .....	356,711	311,520	326,854	285,446
25-34 .....	407,453	362,678	369,173	328,604
35-44 .....	326,797	344,357	304,954	321,341
45-54 .....	244,021	266,850	236,687	258,830
55-59 .....	78,936	78,748	79,018	78,829
60-64 .....	49,118	47,724	49,735	48,324
65 and over .....	33,411	36,155	33,198	35,926
<b>Totals .....</b>	<b>1,706,020</b>	<b>1,674,434</b>	<b>1,608,706</b>	<b>1,583,176</b>

<sup>1</sup> The populations were derived by summing the number of wage-earners of each marital status within each age group. Such data were obtained by multiplying the participation rates for each marital status, within each age group—from Table VI—by the corresponding base population from Table V.

# **Age, Marital Status, Participation Rates, and their Interactions, as Components in the Increased Number of Female Wage-earners Between 1951 and 1961**

As outlined above, shifts in the age and marital-status composition of the female population aged 15 or over were such as to considerably reduce the increase of wage-earners over the decade from that expected simply on the basis of the increase in the total female population aged 15 or over. On the other hand, the rise in the participation rates of women in nearly all age and marital-status categories more than counteracted the depressing effects of shifts in the demographic structure. This interaction of opposing forces—the demographic, and the socio-economic as revealed in participation rates—was the process which resulted in the changed number of female wage-earners over the decade.

Table VIII outlines the contributions of each variable—age, marital status and participation rates—and the interactions of these variables, to the increase in the number of female wage-earners observed over the decade.<sup>13</sup>

<sup>13</sup> A more detailed version of Table VIII, showing the steps taken in decomposing the overall change observed is given in Appendix D, p. 26.

If the 1951 demographic structure—age and marital status—and 1951 participation rates had remained in 1961, the number of female wage-earners would have increased by some 256,000. The application of the higher 1961 participation rates to the hypothetical 1961 population with the 1951 demographic structure produced an additional 378,079, the maximum hypothetical increase over the decade being 633,840. The increase actually observed was 510,298, or some 122,000 less than the hypothetical maximum. Table VIII shows that the unfavourable marital-status shift over the decade, away from the highly participating single women, was the primary depressing factor. Even with the counteracting effect of the higher 1961 participation rates of married women, a hypothetical decrease of 97,000 wage-earners from the maximum of 633,840 noted above, resulted from the marital-status shift. Without the counteracting effect of the higher 1961 participation rates, the loss would have been over 107,000.

The inter-decade shift in age composition, away from the most highly participating age groups, resulted in a hypothetical loss of some 28,000 wage-earners from the potential maximum. The overall effect of 1961 participation rates was to increase the loss due to the age shift to 32,000. The reason for the direction of interaction shown here is primarily

**TABLE VIII. Components of Change in the Number of Female Wage-earners in Canada Between 1951 and 1961**

A. 'Basic' increase(1961 pop. x 1951 age, m.s., x 1951 p.r. - 1951 pop. x 1951 age, m.s., x 1951 p.r.) <sup>1</sup> .....			+ 255,762
B. 'Basic' participation rate contribution (1961 pop. x 1951 age, m.s., x 1961 p.r. - 1961 pop. x 1951 age, m.s., x 1951 p.r.) <sup>1</sup> .....			+ 378,080
C. Total 'basic' increase (A. + B.).....			+ 633,842
D. Actual increase 1951 to 1961.....			+ 510,998
E. Difference (D. -C.) due to lack of fit between 'basic' assumptions of A. and B. and the actual situation.....			- 122,844
<b>Explanation of Item 'E' above:<sup>2</sup></b>			
- 122,844 = - 28,089 - 107,491 + 6,446 + 6,290 where			
- 122,844 is item E.			
- 28,089 is the separate age effect			
- 107,491 is the separate marital-status effect			
+ 6,446 is the effect of interaction of age and marital status			
+ 6,290 is the effect of interaction of participation rates and demographic changes			
		Number	Percentage
<b>Percentage contribution of components:</b>			
(1) participation rate change.....		378,080	74.0
(2) Interaction of participation rates and demographic changes.....		6,290	1.2
(3) Separate impact of demographic change.....		126,628 <sup>3</sup>	24.8
<b>Totals.....</b>		<b>510,998</b>	<b>100.0</b>

<sup>1</sup> Pop. = population; m.s. = marital status; p.r. = participation rates

<sup>2</sup> For a detailed account see Appendix D, page 26.

<sup>3</sup> 126,628 = 255,762 - 28,089 - 107,491 + 6,446, where the individual numbers are explained above.



the combination of the lower 1961 participation rate for females aged 15-19, with the higher proportion of such women in the 1961 base population.

The counteracting effect of 1961 participation rates on the restrictive effect of the 1961 marital-status change from that in 1951, is explained by the fact that the 1961 population distributed according to the 1951 age and 1961 marital-status structure was more 'at risk'; the proportion of married women was larger in 1961 in each age group, and the 1961 participation rates for married females showed the most spectacular increases over the decade.

Table VIII shows that 74 per cent of the increase in the number of female wage-earners over the decade may be attributed to increased participation rates. About 25 per cent of the increase was derived from the expansion of the base population 'at risk' despite restrictions imposed by unfavourable changes in the age and marital-status composi-

tion. About one per cent of the increase cannot be attributed to either of the above sources directly as it is the product of interaction among 1961 participation rates, and the 1961 age and marital-status structure of the base population.<sup>14</sup>

Table IX lists hypothetical increases as well as the actual increase of female wage-earners, based on various assumptions about the demographic structure of the population, and participation rates. The hypothetical increases range from 12 per cent to a high of 59 per cent, with the actual increase being about 48 per cent. Changes in the population at risk for labour force participation—through shifts in its demographic composition—are shown in Table IX to be of considerable potential importance. Under 1951 participation rates, variations in the demographic structure provide a range of 12 to 24 per cent in the hypothetical increase of wage-earning females. Under 1961 participation rates, the corresponding range is from 48 to 59 per cent.

**TABLE IX. Hypothetical Increase in Relation to the Actual Rise in the Numbers of Female Wage-earners, 1951 to 1961, Derived from Various Combinations of 1951 and 1961 Age, Marital-status, and Participation-rate Distributions**

1961 population components	Increase of wage-earners, 1951 to 1961	
	Numbers	Percentage
1961 age, 1961 marital status, 1951 participation rates .....	126,629	11.8
1951 " 1961 " " 1951 " " .....	148,271	13.8
1961 " 1951 " " 1951 " " .....	227,673	21.2
1951 " 1951 " " 1951 " " .....	255,762	23.8
1961 " 1961 " " 1961 " " .....	510,998 (actual increase)	47.6
1951 " 1961 " " 1961 " " .....	536,528	50.0
1961 " 1951 " " 1961 " " .....	602,256	56.1
1951 " 1951 " " 1961 " " .....	633,842	59.0

It is well to remember that the juxtaposition of various combinations of 1951 and 1961 participation rates, and age and marital-status compositions through standardization, may not provide a realistic account of events. Changes in participation rates are not likely independent of shifts in the age and marital-status structure of a population. The realism of the hypothetical populations of wage-earners constructed through standardization procedures is directly related to the independence of participation

rates of shifts in the demographic structure of the population. Section II of this paper constitutes a report on the way in which participation rate changes may be responsive to changes in the demographic structure of a population.

<sup>14</sup> Some scholars allocate the interaction component to the others. See: Durand, J.D. *The Labour Force in the United States, 1890-1960*, New York: Social Sciences Research Council, 1948, Appendix B.

## SECTION II

### Some Relationships Between Changes in Participation Rates of Ever-married (Married, Widowed, Divorced) Women as Wage-earners, and Shifts in the Marital-status Composition of the Total Female Population

With one assumption, a functional relationship can be illustrated between changes in the marital-status composition of specific age groups of females in the population and shifts in participation rates of women in the labour force. The premise is that the number of females by age group, in the labour force of year "X" may be used as an estimate of the 'demand' for females, by age group.

One can evaluate 'demand' in several ways; the actual female labour force overestimates demand in that it assumes no substitutibility between male and female labour, and also because the unemployed are included in the labour force; however, the actual female labour force figure underestimates demand in that vacancies for females that are not filled are ignored, as are jobs filled by males for which certain females may be better qualified. Alternately, one could take the number of females in 'female' occupations—those with an arbitrary percentage of female labour—as demand. About two thirds of the 1961 female labour force in Canada was engaged in only ten occupational classes.<sup>15</sup>

....if a fairly high proportion of all female workers is concentrated in occupations which are predominantly female, then the idea of a demand for female labour takes on some significance....

....A demand for nurses and secretaries is,.... in the short run at least, a demand for female workers, if for no other reason than that there are few men around with the requisite training.<sup>16</sup>

For purposes of this study, demand is taken to be represented by the actual numbers of females in the labour force.

At any level of demand—i.e. for any hypothetical number of females, by age group, in the labour force of year "X"—one can state a minimum and a maximum participation rate by marital-status category. In this section a 'minimum necessary' 1961 participation rate for ever-married women in certain age groups is illustrated. To produce such data, one need only postulate a certain demand—in this case

the actual numbers of wage-earners in the age groups in 1961—and estimates of the maximum possible participation rate for single women in the age groups concerned.

Participation rates of single women are higher than those for married women, for obvious reasons.<sup>17</sup> The demand for female labour may be met first through employment of the available single females. However, once a certain proportion of the single women has been employed, further labour can be obtained only by drawing on the ever-married female population.

The maximum theoretical participation rate of single women is, of course, 100 per cent. The realistic maximum will be somewhat less, primarily because of the presence of those who are not employable, through severe physical or mental handicaps. Perhaps 95 per cent is a more reasonable maximum, at least for younger women.<sup>18</sup> Until a study is conducted to ascertain the most reasonable participation rate maximum for each age group, one must work with arbitrary values. In this study 100 and 95 per cent are both considered.

Table X illustrates the relationships referred to above, for female wage-earners aged 20-54, who represent 75 per cent of all female wage-earners.

For three age groups, 25-34, 35-44, and 45-54, a large proportion of the increase in the participation rate of married women between 1951 and 1961, can be accounted for by the fact that only through such a rise could the numbers actually in the labour force in 1961 have been recruited. Even if 95 per cent of all single women aged 35-44 had been in the 1961 wage-earner labour force, the participation rate for married females of this age group would have had to rise from 12 per cent of 1951 to 20 per cent in 1961, in order to meet the demand (the 321,341 wage-earning females aged 35-44 recorded in the 1961 Census). The actual rise in the participation rate of married females of ages 35-44—to 22 per cent—was not much larger than the minimum necessary figure outlined above. The reason for this functional relationship is the combination of increased demand, as defined, for female labour in certain age groups and the attrition over the decade of the proportions single in these age groups

<sup>15</sup> 1961 *Census of Canada*, Vol. III, Bulletin 3.1-3, Table 6 contains the basic data; these are analyzed in "Women at Work in Canada", *op. cit.*, Ch. IV.

<sup>16</sup> Oppenheimer, Valerie K., "The Interaction of Demand And Supply And Its Effects on the Female Labour Force In The United States", paper presented at the meetings of the Population Association of America, New York, April 30, 1966, pp. 12, 13.

<sup>17</sup> The relative importance of marital status, age, and education for the participation of women in Canada's work force in 1961 is outlined in: Allingham, J.D., "Women Who Work: Part I", *Special Labour Force Studies*, No. 5, Ottawa: Dominion Bureau of Statistics, 1967.

<sup>18</sup> This value is only a guess, based on the observation that actual rates rarely rise above this; the proportion will be inversely related to age to the extent that infirmities precluding employment increase with age.



**TABLE X. Minimum Necessary Changes in Participation Rates of Ever-married Women Aged 20-54 as Wage-earners in 1951 and 1961 using Actual Numbers in 1961 as a Fixed Demand, and with Two Assumptions of Maximum Possible Participation Rates of Single Women<sup>1</sup>**

Age group	A Maximum participation rate of single women (hypothetical)	B Maximum number of single women, 1961	C Actual number of female wage-earners, 1961	D Necessary number of married participants (C - D)	F Participation rates of ever-married females			
					Actual		Minimum necessary in 1961 under	
					1951	1961	100 (A)	95 (A)
20-24 .....	100.0	240,971		44,475				
	95.0	228,922	285,446	56,524	16.99	26.99	12.56	15.96
25-34 .....	100.0	157,739		170,865				
	95.0	149,852	328,604	178,752	11.47	19.24	16.09	16.83
35-44 .....	100.0	108,383		212,958				
	95.0	102,964	321,341	218,377	12.06	22.11	19.56	20.06
45-54 .....	100.0	90,916		167,914				
	95.0	87,234	258,830	171,596	11.63	23.71	20.28	20.72

<sup>1</sup> Taking (C) as representing 'demand', and assuming two different participation rates for single women (A), providing (B) females, (D) females must be obtained from among the ever-married population. The ever-married wage earners (D) represent the minimum necessary participation rates of such females (F), which can then be compared with the actual change in the participation rates of ever-married females over the decade.

The above findings may have implications for labour force projections. By hypothetically varying the 'demand' parameter—e.g. the numbers of labour-force females by age groups expected in year "X"<sup>19</sup>—and given a projected marital-status distribution of the population age groups in year "X", one can show

the minimum change necessary in participation rates of married women from 1961 to year "X". Conversely, by postulating a maximum likely participation rate for married women, by age, one can set the maximum size of the female labour force, by age, in year "X". One could therefore revise available labour-force projections<sup>20</sup> by considering projected changes in the age and marital-status structure of the female population.

<sup>19</sup> In constructing such estimates, one must of course make some assumptions about the relative substitutibility of male and female labour, and of single and married females. Substitutibility of male and female labour will in part depend on the relative prices of such labour. The utility of results from such an exercise will depend on the theoretical soundness of initial assumptions.

<sup>20</sup> Denton, F.T., Kasahara, Y., and Ostry, S., *Population and Labour Force Projections to 1970*, Staff Study No. 1, Economic Council of Canada, Ottawa: Queen's Printer, Dec. 1964.





## APPENDICES





**APPENDIX A. Populations of Female Wage-earners, 1961, Derived by Standardizing the 1961 Female Population on Various Combinations of 1951, 1961 Participation Rates, and Age and Marital-status Distributions:**  
**Age Distributions of Each Population are Illustrated**

Age group	Total	Single	Married	Widowed and divorced	Total	Single	Married	Widowed and divorced	
15-19 .....	1951 age, marital status, participation rates				1961 age, 1951 marital status, 1951 participation rates				
	per cent								
	17.7	26.2	2.2	0.1	19.5	29.1	2.4	0.1	
	23.5	29.2	15.9	1.0	20.9	26.1	14.2	0.9	
	23.4	21.0	32.5	10.7	21.3	19.2	29.6	9.2	
	16.6	11.6	27.1	21.1	17.8	12.5	29.3	21.6	
	11.1	7.0	16.0	29.2	12.4	7.9	18.0	31.0	
	3.5	2.2	3.6	14.8	3.6	2.3	3.7	14.3	
	2.3	1.4	1.7	12.0	2.3	1.4	1.7	11.3	
	1.9	1.4	0.9	11.1	2.1	1.5	1.0	11.7	
	Totals .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Totals ..... No.	1,327,940	864,692	368,881	94,367	1,299,851	842,630	359,920	97,301
20-24 .....	1951 age, 1961 marital status, 1951 participation rates				1961 age, 1961 marital status, 1951 participation rates				
	per cent								
	19.2	30.3	2.3	0.1	21.1	33.4	2.5	0.1	
	22.9	28.4	17.3	1.3	20.3	25.3	15.5	1.1	
	22.1	18.2	32.3	9.6	20.0	16.5	29.6	8.3	
	16.0	9.9	26.7	19.8	17.1	10.6	28.9	20.2	
	11.4	7.2	15.5	28.8	12.7	8.0	17.4	30.5	
	3.8	2.7	3.4	15.4	3.9	2.7	3.5	14.9	
	2.5	1.7	1.6	13.0	2.5	1.7	1.6	12.3	
	2.1	1.5	0.8	12.0	2.3	1.7	0.9	12.6	
	Totals .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Totals ..... No.	1,220,449	740,504	391,806	88,139	1,198,806	726,529	381,379	90,898
25-34 .....	1951 age, 1951 marital status, 1961 participation rates				1961 age, 1951 marital status, 1961 participation rates				
	per cent								
	12.3	22.7	1.7	0.1	13.5	25.2	1.8	0.1	
	20.9	30.5	12.7	0.8	18.6	27.4	11.2	0.7	
	23.9	21.7	29.3	8.4	21.7	19.9	26.4	7.2	
	19.1	12.0	28.2	17.8	20.6	13.0	30.1	18.2	
	14.3	7.5	19.9	30.4	15.9	8.4	22.0	32.2	
	4.6	2.5	5.1	17.2	4.7	2.6	5.1	16.6	
	2.9	1.7	2.4	14.2	2.9	1.7	2.4	13.4	
	2.0	1.6	0.9	11.1	2.2	1.7	0.9	11.7	
	Totals .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Totals ..... No.	1,706,020	872,189	710,140	123,691	1,674,434	846,002	700,726	127,706
35-44 .....	1951 age, 1961 marital status, 1961 participation rates				1961 age, marital status, participation rates				
	per cent								
	13.0	26.4	1.7	0.1	14.3	29.2	1.9	0.0	
	20.3	29.9	13.8	1.1	18.0	26.7	12.3	0.1	
	22.9	18.9	29.4	7.5	20.8	17.2	26.5	6.4	
	19.0	10.3	27.9	16.6	20.3	11.1	29.8	16.9	
	14.7	7.7	19.3	29.7	16.3	8.6	21.5	31.5	
	4.9	3.0	4.8	17.7	5.0	3.1	4.9	17.2	
	3.1	2.0	2.2	15.3	3.0	2.0	2.2	14.4	
	2.1	1.8	0.8	12.0	2.3	2.0	0.9	12.6	
	Totals .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Totals ..... No.	1,608,706	742,379	750,063	116,264	1,583,176	724,675	738,483	120,018

APPENDIX B. Marital-status Distribution of the Population of Female Wage-earners Outlined in Appendix A.

Age group	Total	Total	Single	Married	Widowed and divorced	Total	Total	Single	Married	Widowed and divorced
1951 age, marital status, participation rates						1961 age, 1951 marital status, 1951 participation rates				
	No.	per cent				No.	per cent			
15-19 .....	234,973	100.0	96.5	3.5	0.1	253,841	100.0	96.5	3.5	0.1
20-24 .....	311,863	100.0	80.9	18.8	0.3	272,354	100.0	80.9	18.8	0.3
25-34 .....	311,210	100.0	58.3	38.5	3.2	277,011	100.0	58.3	38.5	3.2
35-44 .....	219,936	100.0	45.4	45.5	9.1	231,754	100.0	45.4	45.5	9.1
45-54 .....	147,617	100.0	41.3	40.1	18.7	161,427	100.0	41.3	40.1	18.7
55-59 .....	46,631	100.0	41.3	28.7	30.0	46,520	100.0	41.3	28.7	30.0
60-64 .....	30,234	100.0	41.2	21.2	37.5	29,376	100.0	41.2	21.2	37.5
65 and over .....	25,476	100.0	45.9	12.9	41.2	27,568	100.0	45.9	12.9	41.2
Totals .....	1,327,940	100.0	65.1	27.8	7.1	1,299,851	100.0	65.1	27.8	7.1
1951 age, 1961 marital status, 1951 participation rates						1961 age, 1961 marital status, 1951 participation rates				
	No.	per cent				No.	per cent			
15-19 .....	233,849	100.0	96.1	3.9	0.1	252,626	100.0	96.1	3.9	0.1
20-24 .....	279,358	100.0	75.3	24.2	0.4	243,967	100.0	75.3	24.2	0.4
25-34 .....	269,803	100.0	49.9	47.0	3.1	240,154	100.0	49.9	47.0	3.1
35-44 .....	195,137	100.0	37.5	53.6	8.9	205,622	100.0	37.5	53.6	8.9
45-54 .....	139,409	100.0	38.2	43.6	18.2	152,451	100.0	38.2	43.6	18.2
55-59 .....	46,797	100.0	42.3	28.7	28.9	46,685	100.0	42.3	28.7	28.9
60-64 .....	30,804	100.0	42.1	20.6	37.2	29,931	100.0	42.1	20.6	37.2
65 and over .....	25,292	100.0	45.1	12.9	42.0	27,370	100.0	45.1	12.9	42.0
Totals .....	1,220,449	100.0	60.7	32.1	7.2	1,198,806	100.0	60.7	32.1	7.2
1951 age, 1951 marital status, 1961 participation rates						1961 age, 1951 marital status, 1961 participation rates				
	No.	per cent				No.	per cent			
15-19 .....	209,573	100.0	94.3	5.7	0.0	226,402	100.0	94.3	5.7	0.0
20-24 .....	356,711	100.0	74.5	25.2	0.3	311,520	100.0	74.5	25.2	0.3
25-34 .....	407,453	100.0	46.4	51.1	2.5	362,678	100.0	46.4	51.1	2.5
35-44 .....	326,797	100.0	32.0	61.2	6.7	344,357	100.0	32.0	61.2	6.7
45-54 .....	244,021	100.0	26.7	57.9	15.4	266,850	100.0	26.7	57.9	15.4
55-59 .....	78,936	100.0	27.5	45.5	27.0	78,748	100.0	27.5	45.5	27.0
60-64 .....	49,118	100.0	29.7	34.5	35.8	47,724	100.0	29.7	34.5	35.8
65 and over .....	33,411	100.0	40.7	18.1	41.2	36,155	100.0	40.7	18.1	41.2
Totals .....	1,706,020	100.0	51.1	41.6	7.3	1,674,434	100.0	51.1	41.6	7.3
1951 age, 1961 marital status, 1961 participation rates						1961 age, marital status, participation rates				
	No.	per cent				No.	per cent			
15-19 .....	209,087	100.0	93.7	6.2	0.1	225,876	100.0	93.7	6.2	0.1
20-24 .....	326,854	100.0	67.8	31.8	0.3	285,446	100.0	67.8	31.8	0.3
25-34 .....	369,173	100.0	38.0	59.7	2.3	328,604	100.0	38.0	59.7	2.3
35-44 .....	304,954	100.0	25.1	68.6	6.3	321,341	100.0	25.1	68.6	6.3
45-54 .....	236,687	100.0	24.1	61.3	14.6	258,830	100.0	24.1	61.3	14.6
55-59 .....	79,018	100.0	28.3	45.6	26.1	78,829	100.0	28.3	45.6	26.1
60-64 .....	49,735	100.0	30.5	33.7	35.8	48,324	100.0	30.5	33.7	35.8
65 and over .....	33,198	100.0	40.0	18.1	41.9	35,926	100.0	40.0	18.1	41.9
Totals .....	1,608,706	100.0	45.8	46.6	7.6	1,583,176	100.0	45.8	46.6	7.6



**APPENDIX C. Components of Change in the Age and Marital-status Distributions of Female Wage-earners,  
Canada, 1951 to 1961**

Age group	Total	Single	Married	Widowed and divorced	Total	Single	Married	Widowed and divorced	Total	Single	Married	Widowed and divorced
	A. Total change <sup>1</sup>				B. Basic participation rate contribution <sup>2</sup>				C. Basic age contribution <sup>3</sup>			
15-19 .....	- 9,097	- 15,097	5,900	100	-25,400	-29,082	3,670	12	18,968	18,207	657	4
20-24 .....	-26,416	- 58,673	32,112	144	44,848	13,546	31,231	71	-39,509	-31,964	- 7,424	- 121
25-34 .....	17,395	- 56,535	76,258	-2,329	46,243	7,509	88,430	304	-34,199	-19,933	-13,161	-1,105
35-44 .....	101,405	- 19,228	120,260	373	106,861	4,715	100,061	2,085	11,818	5,369	5,378	1,071
45-54 .....	111,213	1,552	99,440	10,221	96,404	4,347	82,060	9,997	13,810	5,699	5,532	2,579
55-59 .....	32,198	3,025	22,559	6,614	32,305	2,448	22,526	7,331	- 111	- 46	- 32	- 33
60-64 .....	18,090	2,268	9,876	5,946	18,884	2,100	10,527	6,257	- 858	- 354	- 182	- 322
65 and over .....	10,448	2,691	3,197	4,582	7,935	1,914	2,754	3,267	2,092	961	271	861
<b>Totals .....</b>	<b>255,236</b>	<b>-140,016</b>	<b>369,601</b>	<b>25,651</b>	<b>378,080</b>	<b>7,497</b>	<b>341,259</b>	<b>29,324</b>	<b>-28,089</b>	<b>-22,062</b>	<b>- 8,961</b>	<b>2,934</b>
	D. Basic marital-status contribution <sup>4</sup>				E. Basic interaction: age x marital status <sup>5</sup>				F. Amendment to C by 1961 participation rates <sup>6</sup>			
15-19 .....	- 1,124	- 2,004	817	63	- 90	- 161	- 66	5	- 2,039	-2,335	- 295	1
20-24 .....	- 32,505	- 41,881	9,159	217	4,118	5,306	-1,160	- 28	- 5,682	-1,716	-3,957	- 9
25-34 .....	- 41,407	- 46,697	6,919	-1,629	4,550	5,131	- 760	179	-10,576	- 825	-9,718	- 33
35-44 .....	- 24,799	- 26,794	4,482	-2,487	-1,332	-1,439	241	-134	5,742	253	5,377	112
45-54 .....	- 8,208	- 7,597	1,597	-2,208	- 768	- 710	- 149	-207	9,019	407	7,677	935
55-59 .....	166	559	44	- 438	- 1	- 1	- 1	1	- 77	- 6	- 54	- 17
60-64 .....	570	512	-66	125	- 16	- 15	2	- 3	- 536	- 60	- 299	-177
65 and over .....	- 184	- 286	-27	131	- 15	- 24	- 2	11	652	157	226	269
<b>Totals .....</b>	<b>-107,491</b>	<b>-124,188</b>	<b>22,925</b>	<b>-6,228</b>	<b>6,446</b>	<b>8,087</b>	<b>-1,465</b>	<b>-175</b>	<b>- 3,497</b>	<b>-4,125</b>	<b>- 453</b>	<b>1,081</b>
	G. Amendment to D by 1961 participation rates <sup>7</sup>				H. Amendment to E by 1961 participation rates <sup>8</sup>				I. Total contribution of 1961 participation rates (F + G + H)			
15-19 .....	638	259	366	15	50	21	29	0	-1,351	-2,057	690	16
20-24 .....	2,648	-2,249	4,881	16	-335	285	-618	- 2	-3,369	-3,680	306	5
25-34 .....	3,127	-1,933	5,109	- 49	-344	213	-561	4	-7,793	-2,545	-5,170	- 75
35-44 .....	2,956	-1,265	4,481	- 260	159	- 67	240	-14	8,857	-1,079	10,098	-162
45-54 .....	874	- 542	2,217	- 801	82	- 51	207	-74	9,975	- 186	10,101	60
55-59 .....	-84	71	75	- 230	0	0	0	0	- 161	65	21	-247
60-64 .....	47	86	-108	69	- 1	- 1	- 3	- 3	- 490	25	- 404	-111
65 and over .....	-29	- 47	- 23	41	- 1	- 3	- 2	4	622	107	201	314
<b>Totals .....</b>	<b>10,177</b>	<b>-5,622</b>	<b>16,998</b>	<b>-1,199</b>	<b>-390</b>	<b>397</b>	<b>-702</b>	<b>-85</b>	<b>6,290</b>	<b>-9,350</b>	<b>15,843</b>	<b>-203</b>

<sup>1</sup> 1961 pop. x 1951 age, m.s., p.r. - 1961 pop. x 1961 age, m.s., p.r.

<sup>2</sup> 1961 pop. x 1951 age, m.s., 1961 p.r. - 1961 pop. x 1951 age, m.s., p.r.

<sup>3</sup> 1961 pop. x 1951 age, m.s., p.r. - 1961 pop. x 1961 age, 1951 m.s., p.r.

<sup>4</sup> 1961 pop. x 1951 age, m.s., p.r. - 1961 pop. x 1951 age, 1961 m.s., 1951 p.r.

<sup>5</sup> (1961 pop. x 1951 age, m.s., p.r. - 1961 pop. x 1961 age, m.s., 1951 p.r.) - (C + D).

<sup>6</sup> C - (1961 pop. x 1951 age, m.s., 1961 p.r. - 1961 pop. x 1961 age, 1951 m.s., 1961 p.r.).

<sup>7</sup> D - (1961 pop. x 1951 age, m.s., 1961 p.r. - 1961 pop. x 1951 age, 1961 m.s., p.r.).

<sup>8</sup> E - ((1961 pop. x 1951 age, m.s., 1961 p.r. - 1961 pop. x 1961 age, m.s., p.r.) - ((1961 pop. x 1951 age, m.s., 1961 p.r. - 1961 pop. x 1961 age, m.s., p.r.)

+ (1961 pop. x 1951 age, m.s., 1961 p.r. - 1961 pop. x 1951 age, 1961 m.s., p.r.))).

APPENDIX D. Components of Change in the Number of Female Wage-earners, Canada, 1951 to 1961

Part I: Components <sup>1</sup>			Part II: Sources of E (Part I)		
A. 'Basic' increase (1961 pop. x 1951 age, 1951 m.s., x 1951 p.r. - 1951 pop. x 1951 age, 1951 m.s., x 1951 p.r.) .....	+ 255,762		1. Age:		
			1951 base (1961 pop. x 1951 age, 1951 m.s., x 1951 p.r. - 1961 pop. x 1961 age, 1951 m.s., x 1951 p.r.) .....	- 28,089	
			1961 base (as above except 1961 p.r. are used) .....	- 31,586	
			Difference 1961 base - 1951 base .....	- 3,497	
B. 'Basic' participation rate contribution (1961 pop. x 1951 age, 1951 m.s. x 1961 p.r. - 1961 pop. x 1951 age, 1951 m.s., x 1951 p.r.) .....	+ 378,080		2. Marital status:		
			1951 base (1961 pop. x 1951 age, 1951 m.s., x 1951 p.r. - 1961 pop. x 1951 age, 1961 m.s. x 1951 p.r.) .....	- 107,491	
			1961 base (as above except 1961 p.r. are used) .....	- 97,314	
			Difference 1961 base - 1951 base .....	+ 10,177	
C. Total 'basic' increase (A + B) .....	+ 633,842		3. Age + marital status:		
			(1 + 2 with 1951 base) .....	- 135,580	
			(1 + 2 with 1961 base) .....	+ 128,900	
			Difference .....	+ 6,680	
D. Actual increase 1951 - 1961 .....	+ 510,998		4. Age x marital status:		
			1951 base (1961 pop. x 1951 age, m.s., p.r. - 1961 pop. x 1961 age, m.s., 1951 p.r.) .....	- 129,134	
			1961 base (as above but with 1961 p.r.) .....	- 122,844	
			Difference 1961 base - 1951 base .....	+ 6,290	
E. Difference D - C (due to lack of fit between 'basic' assumptions of A and B, and the actual situation) .....	- 122,844		5. Interaction (4. - 3.):		
			1951 base .....	+ 6,446	
			1961 base .....	+ 6,056	
			Difference 1961 base - 1951 base .....	- 390	
Part III: Solution of components problem				Number	Percentage
a. Contribution of age and marital status interacting on a 1951 base (4. Part II) .....	- 129,134		Part IV: Percentage contribution of components		
b. a + interaction contribution of the 1961 base (participation rates) =			Participation change, 1951 base .....	+ 378,080	73.99
b(1) Difference from 1. Part II .....	- 3,499		Interaction .....	+ 6,290	1.23
b(2) Difference from 2. Part II .....	+ 10,177		Basic population increase (A. Part I - a. Part III) .....	+ 126,628	24.78
b(3) Difference from 5. Part II .....	- 390		Actual increase .....	+ 510,998	100.00
$\Sigma$ = Difference from 4. Part II .....	+ 6,290	+ 6,290			
b(1) .....					
a + b = E = Difference D - C (Part I) .....	- 122,844				
c. Final components = A + B (Part I) + b (Part III) .....	+ 255,762				
	+ 378,080				
	- 122,844				
Actual increase .....	+ 510,998				

<sup>1</sup> m.s. = marital status, pop. = population, p.r. = participation rates.

















